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6th. Charge as before: 10 slugs put in.

7th, 8th, 9th, and 10th. Charge as before, but omitting the cartridge: 2, 3, 5, and 12 shots were respectively put into the target.

In the above experiments most of the slugs, and even some of the shot, pierced through twenty-five folds of brown paper.

The Society are of opinion that Mr. Jenour's cartridge possesses the merits of novelty, ingenuity, and probable utility, especially for wild-fowl shooting. They are aware that many experiments remain to be tried, in order to ascertain the precision of which the invention is capable, and will be glad to receive farther information on this subject.

No. VIII.

VALVE AND STAND-PIPE FOR WATER-MAINS.

The sum of FIVE GUINEAS was this session presented to Mr. DAVID MAGSON, 26, Harp-alley, Fleet-street, for a Valve and Stand-pipe for Water Mains; models of which have been placed in the Society's repository.

GENTLEMEN,

I VERY respectfully beg to call your attention to an invention which I conceive must eventually prove of great public utility, but more especially to the interests of the various water companies, whenever the same may become generally used.

The improvement to which I allude is a *water-guard*, simple in its construction, effective in its object, and acting on a valve, a model of which I have sent for the inspection of the committee.

The invention will prove a great saving in the fitting up of cisterns, and particularly through the abolition of the expensive brass cocks, copper balls, &c. which of themselves do not, nor ever did, afford sufficient security to the water companies, much of the water being at present wasted through the carelessness or ignorance of housekeepers and their servants, by the cisterns being allowed to overflow after they have been filled.

The peculiar merits of my invention appear to be the following.

1st. It acts under a column of water of upwards of seventy feet with the greatest ease, and closes without the least noise.

2d. It will supply cisterns to the fullest extent during the winter, though the draw off cock of the same may be quite frozen, and will inject a supply in half the time of the present ball-cock, as has been ascertained by a trial of upwards of two years.

3d. The price of these articles will be about 25 per cent. less than ball-cocks, and being of cast-iron, consequently are not worth stealing.

I also beg leave to offer to the notice of the Society, an improved stand-pipe, which has been tried, during the last winter, at the West Middlesex Water Works, Berners-street.

It has the advantage of giving an abundant supply in less time than any other; it cannot be left open by neglect, as it shuts off by its own pressure; it also remains longer unfrozen than the common stand-pipe, and as the water cannot run to waste out of it, the accumulation of ice in the street round about, which is a serious inconvenience in the use of the common stand-pipe, is hereby prevented.

CERTIFICATE.

West Middlesex Water Works' Office,
Berners-street, April 28, 1826.

Sir,

We have had one of Mr. Magson's ball-valves at work for some time past, and it appears to answer the purpose very well, and I have no doubt but it will be found of very considerable advantage to water works in general, and it is an invention deserving the attention of the Society.

I am, Sir,
&c. &c. &c.
W. Turner, *Clerk.*

A. Aikin, Esq.
Secretary, &c. &c.

In the 38th volume of the Society's Transactions, is a description of Mr. Bullock's ball-valve, intended for the purpose of superseding the common ball-cock. The general construction of Mr. Magson's valve is the same as Mr. Bullock's, consisting of a lever, having a float at one end, and bearing upward by the other against the pin or tail of a valve fixed in the delivering pipe. When the cistern is full, the lever is brought, by the action of the float, into a horizontal position, and then its short arm being lower than the end of the valve-pin, exerts no action on it; the pressure of water in the delivering-pipe, therefore, keeps the valve shut, and prevents the outflow of the water. In proportion as the water in the cistern is drawn off, its level subsides, and with it the float attached to the long end of the lever; the short arm rises in proportion, takes its bearing on the end of the valve-pin, and as soon as its pressure becomes superior to the counter-pressure of the water above the valve, it raises this latter, and the water flows into the cistern, till by its rise the pressure of the lever on the valve-pin becomes inferior to that on the valve itself. The valve then descends, and the supply of water ceases.

The superiority of Mr. Magson's valve consists in the fulcrum of the lever being placed directly below the valve, and in the curved form of the short arm, whereby the power of the float to raise the valve is greatly increased.

Figs. 1 and 2 are a side and front view of the valve-box and lever, and fig. 3 is a section of the same: *a* the box; *b* the mouth which enters the end of the main or supply pipe, and through which the water flows into the box, as shown by the arrow; *c* the lower mouth, through which the water flows out of the box into the cistern; *k*, fig. 3, the valve, the tail of which passes through the guide cylinder *l*, and terminates in the knob *m*, figs. 2 and 3; *j* a round flat float, fixed to the end of the long arm of the lever, either simply by a screw, or better by a hinge-screw, as shown fig. 4; *q* the axis or fulcrum, supported in the

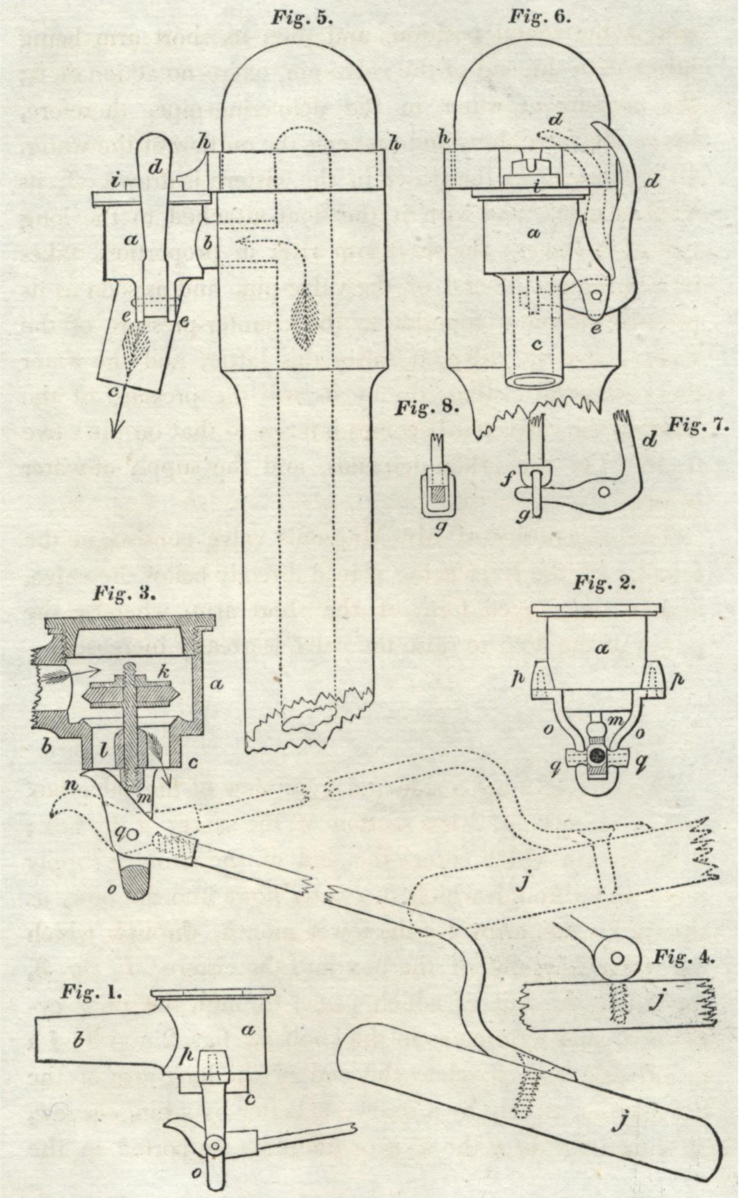

Fig. 5. Fig. 6. Fig. 8. Fig. 7. Fig. 3. Fig. 2. Fig. 4. Fig. 1.

two arms or braces *o o*, which are themselves fastened to the valve-box by means of the screws *p p*; *n* the short end of the lever, which, by bearing on the knob of the valve-tail, raises the valve, and allows the water to flow out at *c*, as shown by the arrow.

The common stand-pipe for the supply of water from the street-mains, when the smaller pipes, that convey the water into the houses, are obstructed by ice, is simply an upright wooden pipe, the open end of which is driven into the main: at the closed end is a lateral hole, fitted with a faucet and spigot for drawing off the water. The spigot is often left out from carelessness or wantonness, whereby a waste of water is incurred, and the street about these stand-pipes soon becomes obstructed more or less by ice.

Figs. 5 and 6 are a side and front view of Mr. Magson's stand-pipe: *b*, fig. 5, is the lateral hole through which the water passes out of the pipe into the box *a*, and is discharged through the spout *c*. In the box is fixed a valve, similar to that already described, except that the tail terminates in a stirrup *g*, figs. 7 and 8, into which the short arm of the lever is received; the dotted line *d*, fig. 6, shows the ordinary position of the lever when the valve is pressed down by the weight of the superincumbent water; when the lever is drawn outwards to the position indicated by the other *d*, fig. 6, the short arm presses upwards, raises the valve, and allows the water to flow out; on letting go the lever, the valve immediately shuts, and there is no loss of water; *h h* is an iron collar that surrounds the head of the pipe, having a projecting piece, to which the valve-box is secured, by means of the screw *i*; *e e* are the two braces which support the fulcrum of the lever.